

Application/Control Number: 09/931,254

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claims pto

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1. (currently amended) A service system including comprising:
 a plurality of server apparatuses;
 a plurality of client apparatuses; and
 a plurality of data processing relay apparatuses for relaying data communication communications between said server apparatuses and said client apparatuses, wherein each server apparatus comprises: a means responsive to a service request issued by said client apparatus to prepare or create data processing control information indicative of a processing method of data requested;
 request receiving means for receiving a service request issued by a client apparatus, the service request requesting data provided by said server apparatus;
 an extended data producing means for producing extended data including said requested data requested in said service request and said data processing control information indicating how to process the data; and
 a means for transmitting said extended data as a response to said service request;
 wherein said data processing relay apparatus comprises:
 a means for receiving said service request to said server apparatus from said client apparatus to transfer said service request to said server apparatus and receiving said response from said server apparatus;

a data processing unit for determining if said received response is said extended data or not, and if said response is said extended data, processing said extended data received from said server apparatus in accordance with said data processing control information added to and included in said extended data to produce its processed result data; and
 a means for transmitting said processed result data produced processed by said data processing unit to said client apparatus as response data to said data service request received from said client apparatus.

2. (currently amended) A service system according to Claim 1, wherein said data processing relay apparatus further comprises:
 a memory unit for storing said extended data received from said server apparatus; and
 wherein said receiving means of said data processing relay apparatus checks, when receiving another service request from said client apparatus, if when said extended data corresponding to a response to said another service request received from said client apparatus is already stored in said memory unit; and
 if said receiving means determines said extended data is stored in said memory unit, said receiving means stops transferring said another service request to said server apparatus, and said data processing unit uses said extended data already stored in said memory unit to respond to as said extended data for a response to said another service request.

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3. (currently amended) A service system according to Claim 2, further comprising

a user management apparatus ~~server~~ connected to said data processing relay apparatus through a communication line to ~~for managing/manage~~, for each user, user management information containing user authentication information for authenticating said user of said client apparatuses and user group information indicative of a group to which said user belongs, wherein

~~when~~ said client apparatus adds user authentication information to comprises a means for transmitting said service request containing user authentication information,


~~wherein~~ said data processing relay apparatus further comprises

a user authentication unit for authenticating said user by using said user authentication information contained in said service request and said user authentication information contained in said user management information registered in said user management server,

~~when~~ said data processing control information preparing or creating/extended data producing means of said server apparatus creates said data processing control information of said extended data containing further adds individual control information indicating process depending on each user to said data processing control information for each user in response to said service request,

~~wherein~~ said data processing unit of said data processing relay apparatus performs said process depending on each user decides said processing method of said requested data corresponding to said user of said client apparatus by using said

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 individual control information and said authorized user authentication information on user authentication result

4. (currently amended) A service system according to Claim 3, further comprising

a charging management apparatus connected to said data processing relay apparatus through a communication line to manage user charge information which is charge information for said each user, wherein

wherein said data processing control information preparing or creating/loading data producing means of said server apparatus creates said data processing control information containing charging process to said charging process in accordance with said charge instruction information to determine charging amount and transmits said charge information including said determined charging amount to said charging management apparatus, instruction information specifying charge information with respect to said requested data.

— said data processing unit of said data processing relay apparatus transmits said response data to said user of said client apparatus authenticated by said authentication unit, and transmits charge information for said response data to said user to said charging management apparatus.

5. (currently amended) A service system according to Claim 4, wherein said external data producing means of said server apparatus further adds user

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preparing information to said charging instruction information such that charging amount varies depending on said user.
 — said data processing control information preparing or creating means of said server apparatus creates said charging instruction information containing information for specifying said users wherein each of said information for specifying said user corresponds to each of said charge information for each user.

6. (currently amended) A service system according to Claim 4, wherein
 said data processing control information preparing or creating means of said server apparatus specifies charge range information as said charging instruction information, and
 wherein said data processing unit of said data processing relay apparatus uses said charge range information to decide said charge information.

7. (currently amended) A service system according to Claim 6, wherein
 said data processing control information preparing or creating means of said server apparatus creates said data processing control information of said extended data containing instruction information which specifies an indication information indicative of replacement or insertion by other data at a specified part of said requested data for replacing a part of said requested data with other data or inserting other data to said requested data, and
 wherein said data processing unit of said data processing relay apparatus performs replacement or insertion processing by other data at said specified part of

said requested data in accordance with said instruction information of said data processing control information of said extended data.

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8. A service system according to Claim 7,

wherein

said indication information includes part information indicative of a replacement or insertion part of the requested data, data type information for specifying replacement or insertion data, and a parameter according to the type of replacement or insertion data.

9. A service system according to Claim 8,

wherein

said replacement or insertion data is time information indicative of time at which said service request from said client apparatus has been processed, and

said data processing unit uses said time information at which said data request has been processed, as said other data.

10. A service system according to Claim 8,

wherein

said client apparatus creates said data request, containing information for identifying said

user of said client apparatus.

said replacement or insertion data is information for identifying said user of said client apparatus,

said data processing unit uses said information for identifying said user of said client apparatus contained in said data request as said other data.

11. A service system according to 8, wherein

said replacement or insertion data is an address selected from a group of addresses prepared in advance by said data processing unit of said data processing relay apparatus.

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12. (currently amended) A service system according to Claim 7, wherein said client apparatus creates said data request containing said user identifying information to said data request, and

said service system further comprising:

a data information server which is connected to said data processing relay apparatus through a communication line, and manages said replacement or insertion data with user attribute information in corresponding manner to each other, so that said replacement or insertion data can be searched by user attribute information; wherein said user management server and manages said user identifying information and said user attribute information in corresponding manner to each other,

wherein said data processing unit of said data processing relay apparatus first generates said user attribute information corresponding to said user identifying information with reference to said user management server, then in accordance with said instruction information, selects replacement or insertion data corresponding to said user attribute information from said data information server, and finally uses said selected data for replacement or insertion of said requested data as said other data.

13. A service system according to Claim 7,

wherein

said client apparatus creates said data request containing area information, and

further comprising:

a data information server which is connected to said data processing relay apparatus through a communication line, and manages said replacement or insertion data so that said replacement or insertion data can be searched by said area information,

wherein

said data processing unit of said data processing relay apparatus selects said replacement or insertion data corresponding to said area information from said data information server, and uses said selected data as said other data.

14. A service system according to Claim 7,

wherein

said data processing control information preparing or creating means of said server apparatus

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creates said data processing control information of said extended data containing instruction information for instructing said data processing unit to perform a specified operation, and instruction information for indicating replacement or insertion by said operation result at said specified part of said requested data, and

said data processing unit of said data processing relay apparatus includes a means for performing an operation in accordance with said instruction information, and a means for performing replacement or insertion by said operation result at a part specified by said instruction information.

15. A service system according to claim 2, wherein

said data processing control information preparing or creating of said server apparatus specifies distribution instruction information indicative of a list of server apparatuses to which the same service requests are transferred in a distributed manner, as said data processing control information of said extended data, and

said data processing unit of said data processing relay apparatus includes a means for selecting a server apparatus from said list of server apparatuses in accordance with said distribution instruction information in said extended data, when said extended data corresponding to said service request received

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from said client apparatus is already stored in said memory unit, and a means for transferring said service request to said selected server apparatus.

16. A service system according to Claim 2, wherein

said data processing control information preparing or creating means of said server apparatus specifies communication quality indication information as said data processing control information of said extended data,

said data processing unit of said data processing relay apparatus includes a means for making communication quality instruction to another relay apparatus on a communication route to said client apparatus in accordance with said communication quality instruction information,

said another relay apparatus performing relay processing in accordance with said communication quality indication.

17. A service apparatus according to Claim 2, further comprising:

a server management server connected to said data processing relay apparatus through a communication line to manage server authentication information for authenticating said server apparatuses, and wherein

said data processing control information preparing or creating means of said server apparatus creates said data processing control information

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containing said server authentication information, and

said data processing relay apparatus includes a server authentication unit for authenticating said server apparatus in accordance with said server authentication information contained in said data processing control information.

said data processing unit of said data processing relay apparatus performs processing specified by said data processing control information depending on a server authentication result of said server authentication processing.

18. A service system according to Claim 17, further comprising:

a charging management apparatus connected to said data processing relay apparatus through a communication line to manage server charging information which is charge information with respect to said server apparatus, and wherein

said data processing relay apparatus transmits charge information with respect to said server apparatus to said charging management apparatus in accordance with executed processings specified by said data processing control information.

said charging management apparatus performs charge processing with respect to said server apparatus.

19. A service system according to Claim 2.

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wherein

said data processing control information preparing or creating means of said server apparatus specifies priority store instruction information of data as said data processing control information of said extended data,

said memory unit includes a specific storage area previously assigned to said server apparatus.

said data processing unit of said data processing relay apparatus includes a means for storing said extended data in said specific storage area of said memory unit in accordance with said priority store instruction information from said server apparatus.

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20. (currently amended): A data processing method in a service system including a server apparatus, a client apparatus and a data processing relay apparatus for relaying data between the server apparatus and the client apparatus, comprising:


a first step of providing the data processing relay apparatus with a data processing unit for processing data in accordance with a data processing instruction which indicates how to process the data;

a second step of receiving a data request ~~input by a user~~ from the client apparatus to the server apparatus by the data processing relay apparatus;

a third step of sending the received data request to the server apparatus by the data processing relay apparatus;

a fourth step of receiving, by the data processing relay apparatus, an extended data, which the server apparatus sends to the data processing relay apparatus in response to the data request, including the data requested in the data request and data processing control information including a user's attribute of at least one the data processing instruction indicating how to process the received data;

a fifth step of storing the received extended data by the data processing relay apparatus;

 a sixth step of extracting the data processing instruction from the data processing control information included in the extended data by the data processing unit of the data processing relay apparatus;

a seventh step of processing the received data in accordance with the extracted data processing instruction by the data processing unit;

(a) an eighth step of repeating the sixth step and the seventh step until completing to process in according to ~~completion of processing in accordance with~~ all data processing instructions in the data processing control information by the data processing unit; and

a ninth step of sending, by the data processing relay apparatus, the data processed by the data processing unit to the client apparatus

21. (previously presented): The data processing method in accordance with claim 20, further comprising:

a tenth step of receiving, by the data processing relay apparatus, an other data request from the client apparatus to the server apparatus;

a eleventh step of comparing data requested by the other data request with the data stored in the data processing relay apparatus and sending the other data request to the server in case that both data does not coincide by the data processing relay apparatus;

a twelfth step of processing the data stored in the data processing relay apparatus in accordance with the data processing control information included in the stored extended data including the data by the data processing unit in case that both data coincide with each other in the eleventh step; and

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a thirteenth step of sending, by the data processing relay apparatus, the data processed in the twelfth step to the client apparatus which has sent the other data request as a response to the other data request

22. (currently amended): A data processing method in a service system including a server apparatus, a client apparatus and a data processing relay apparatus for relaying data communication between the server apparatus and the client apparatus, comprising:

a first step of providing the data processing relay apparatus with a data processing unit for processing data in accordance with a data processing instruction which indicates how to process the data;

a second step of receiving a data request (possibly, a request) from the client apparatus to the server apparatus by the data processing relay apparatus;

a third step of sending the received data request to the server apparatus by the data processing relay apparatus;

a fourth step of sending, by the server apparatus, to the data processing relay apparatus, in response to the data request received from the data processing relay apparatus, an extended data including the data requested in the data request and data processing control information including a server's affiliated at least one two data processing instruction indicating how to process the requested data;

a fifth step of receiving the extended data by the data processing relay apparatus;

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a sixth step of storing the received extended data by the data processing relay apparatus;

a seventh step of extracting the data processing instruction from the data processing control information included in the extended data by the data processing unit of the data processing relay apparatus;

an eighth step of processing the received data in accordance with the extracted data processing instruction by the data processing unit;

a ninth step of repeating the seventh step and the eighth step until completing to process in accordance to all data processing instructions in the data processing control information by the data processing unit; and

a tenth step of sending, by the data processing relay apparatus, the data processed by the data processing unit to the client apparatus


23. (previously presented). The data processing method in accordance with claim 22, further comprising:

a eleventh step of receiving, by the data processing relay apparatus, an other data request from the client apparatus to the server apparatus;

a twelfth step of comparing data requested by the other data request with the data stored in the data processing relay apparatus and sending the other data request to the server in case that both data does not coincide by the data processing relay apparatus;

a thirteenth step of processing the data stored in the data processing relay apparatus in accordance with the data processing control information included in the stored extended data including the data by the data processing unit in case that both data coincide with each other in the twelfth step; and

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 a fourteenth step of sending, by the data processing relay apparatus, the data processed in the thirteenth step to the client apparatus which has sent the other data request as a response to the other data request.

24. (previously presented) The data processing method in accordance with claim 22, wherein the service system includes a user management server connected to the data processing relay apparatus through a communication line,

wherein the second step is the step of receiving, by the data processing relay apparatus, the data request including first user authentication information added by the client apparatus,

wherein the third step is the step of sending, by the data processing relay apparatus, the data request including the first user authentication information to the server apparatus,

wherein the fourth step is the step of sending, by the server apparatus, the extended data including the data processing control information with a user individual control information to the data processing relay apparatus, in response to the data request including the first user authentication information, and

wherein the data processing method further comprises:

a fifteenth step of authenticating, by the data processing relay apparatus, a user of the client apparatus using user management information stored in the user management server and the received first user authentication information; the user management information including second user authentication information for authenticating the user of the client

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15. status, and group information indicating which group the user belongs to;
and

a sixteenth step of processing data, by the data processing unit, the data according to the user individual control information and the authentication result performed in the fifteenth step;

25. (previously presented): The data processing method in accordance with claim 24, wherein the fourth step is the step of sending, by the server apparatus, the extended data added with the information identifying the user, the extended data including the data processing control information including the data processing instruction indicating a charging process for the requested data, and

wherein the data processing method further comprises:

a seventeenth step of charging the authenticated user for the requested data

26. (previously presented): The data processing method in accordance with claim 25, wherein the data processing instruction indicating the charging process is information indicating range of charging,

wherein the seventeenth step is the step of charging using the range of charging.

27. (previously presented): The data processing method in accordance with claim 22, further comprising:

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a eleventh step of sending, by the server apparatus, the extended data including the data processing control information including the data processing instruction indicating to replace at least a part of the data requested by the data request with replacement data or insert insertion data into the data to the data processing relay apparatus; and

a twelfth step of replacing, by the data processing unit, the part of the data with the replacement data or inserting the insertion data to the data in accordance with the data processing instruction in the data processing control information sent in the eleventh step

28. (previously presented). The data processing method in accordance with claim 27, wherein the service system further includes a server information server which is connected to the data processing relay apparatus and stores the replacement or insertion data and attribute information on the user to which the data is directed with linking to each other, and

wherein the data processing method further comprises:

a thirteenth step of receiving, by the data processing relay apparatus, the data request having user identifying information sent by the client apparatus; and

a fourteenth step of storing the user identifying information received by the data processing relay apparatus and the user attribute information linking to each other in the data information server; and

wherein the twelfth step is the step of referring, by the data processing unit, to the data information server in response to the data processing

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instruction, obtaining the user attribute information corresponding to the received user identifying information, selecting the replacement or insertion data corresponding to the user attribute information, and performing the replacement or insertion on the data requested by the data request.

29. (currently amended): A data processing relay apparatus for use in a service system including a server apparatus, a client apparatus and said data processing relay apparatus which relays data between the server apparatus and the client apparatus, said data processing relay apparatus comprising:

a data processing unit for processing data in accordance with a data processing instruction which indicates how to process the data; and

a storage for storing data supplied by said data processing unit,

wherein said data processing unit receives a data request from a user from the client apparatus to the server apparatus, sends the received data request to the server apparatus by the data processing relay apparatus, receives an extended data, which the server apparatus sends in response to the data request, including the data requested in the data request and data processing control information including a user's attribute at least one the data processing instruction indicating how to process the received data, and stores the received extended data in said storage,

wherein said data processing unit further extracts the data processing instruction from the data processing control information included in the extended data, processes the received data in accordance with the extracted data processing instruction by the data processing unit, repeats the extracting

from the data request

and processing functions until completing to process in according to all data processing instructions in the data processing control information by the data processing unit, and sends the data processed to the client apparatus.

30. (previously presented): The data processing relay apparatus in accordance with claim 29, wherein said data processing unit receives another data request from the client apparatus to the server apparatus, compares data requested by the other data request with the data stored in the data processing relay apparatus and sends the other data request to the server in case that both data does not coincide by the data processing relay apparatus, processes the data stored in the storage in accordance with the data processing control information included in the stored extended data including the data in case that both data coincide with each other in the eleventh step, and sends the data processed to the client apparatus which has sent the other data request as a response to the other data request.

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